

MONTHLY JOURNAL OF
THE MUSHROOM GROWERS'
ASSOCIATION

MGA

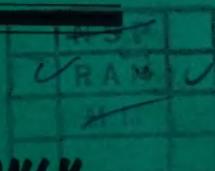
BULLETIN

AUGUST, 1959

NUMBER 116

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MGA BULLETIN

AUGUST - 1959
NUMBER 116

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No responsibility can be accepted by the Editor, the Editorial Board, or the Mushroom Growers' Association for statements made or views expressed in this Bulletin, or for any advertisements included in this publication.

EDITORIAL.

WHO WRITES THIS?

It would seem that, from time to time, members are in some doubt as to who writes this Editorial and whether the opinions expressed are those of the Executive Committee, the Editorial Board or my own. To clear the air then, when my initials appear, the opinions expressed are my own entirely and may well from time to time conflict with those of many members of the Executive Committee and of the Editorial Board.

Thus it is for instance, that in this issue appears a letter from a member of the Editorial Board disagreeing quite firmly with the views expressed in the June Editorial on the subject of mushroom stalks. The fact that I still hold those views is merely incidental.

It is to the everlasting credit of the Executive and the Board that this state of affairs is not only allowed to exist, but is actually encouraged. Any Editorial which, parrot fashion, merely expresses the official views of the organisation concerned with the particular publication, is often hidebound, lacking in colour and lacking in interest. Whilst these charges may well be levelled against the Editorial in this publication, the fault lies entirely with the Editor and not with the Executive or the Board.

It thus becomes quite obvious that those of you who are minded, on only too rare occasions to express your disagreement with this and that in writing are, in directing your fire to the Editor, bang on the target and qualify for a Bisley medal, or something similar.

When, therefore, I now express the view that continued expansion at this time is bad for the industry as a whole and that the only thing the Association can do in the matter at the moment, and the only thing I can do too, is to advise members, large or small, of what I think will be the consequences of increased supplies, that is solely my own opinion. And what then are the consequences as I see them ?

Simply that if expansion continues to increase without the necessary steps being taken to secure an expanded market, then prices will continue to fall. It is as simple as that.

If, on the other hand, restraint is shown in the matter by everyone concerned, then prices will, at the very least, level out at their present figure and may well increase, *in my opinion*. Let us have a little restraint then, gentlemen, let us pause awhile, breathe in deeply and take stock of the situation, lest we rush, willy nilly, headlong to destruction.

There are no medals for the man supplying mushrooms at under the cost of production—only Carey Street and explanations to Official Receivers.

WRA

PART 4 (Conclusion).

BRIEF OUTLINE OF AND CONTROL FOR MUSHROOM PATHOGENS, WEED MOULDS, INDICATOR MOULDS AND COMPETITORS

Prepared by

Dr. L. R. Kneebone and E. L. Merek

of the Department of Botany and Plant Pathology of the Pennsylvania State University for the occasion of the first
Mushroom Industry Short Course

9th—12th July, 1956, and revised by Dr. Kneebone for the Third Mushroom Industry Short Course, 23rd—26th June, 1958.

Common Name of Disease—White plaster mould, Flour mould.

Scientific Name of Causal Organism—*Scopulariopsis fimicola* (Monilia).

Brief Description of Causal Organism—

This mould presents a white aspect throughout. The conidiophores are branched, the upper portions bearing clusters of spore-bearing phialides. The spores are 1-celled, globose and formed in chains.



Symptoms Produced—Dense white patches of mould are produced on the surfaces of compost or soil giving the appearance of flour. Spawn may be retarded in the immediate vicinity of the mould and production is usually delayed through the patches of mould. Eventually the mould dies and normal production resumes provided other conditions are satisfactory.

Brief Life History of Causal Organism—Spores of this mould are nearly everywhere and will germinate under conditions of proper moisture, temperature and pH. The mycelium grows rapidly and soon produces

an abundance of spores which are readily disseminated. Numerous secondary infestations can develop under conditions favouring the mould.

Most Frequent Source(s) of Infection—Air.

How Spread—Airborne, spread during watering.

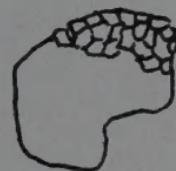
Predisposing Factors to Infection—Compost of pH over 8.2 or compost too wet and poorly aerated.

Suggested Control Measures—Good aerobic composting and pasteurization with a moisture content at spawning not exceeding 72% and a pH not exceeding 8.2. Avoid short and over composted material or if this kind must be used try to reduce the moisture content to 62—65%.

Common Name of Disease—Brown plaster mould.

Scientific Name of Causal Organism—*Papulosporabyssina*.
(*Myriococcum*)

Brief Description of Causal Organism—The mycelium is white. There are no sporulating structures but brown bulbils or granules (sclerotia) are formed in abundance as the mould ages.



Symptoms Produced—Large dense patches of white mould develop on the surfaces of compost and soil, rarely penetrating into the bed. Gradually, from the centre outward, the mould appears to change through shades of tan and light brown to cinnamon brown. Mature colonies look considerably like brown "plaster" with a white fringe. Gradually the mould dries up and dies. Normal mushrooms are produced through the dying patches of mould.

Brief Life History of Causal Organism—The sclerotia are either airborne or survive inadequate composting and pasteurization. These sclerotia germinate on the surface of over wet compost that has not undergone proper conditioning or the mould may begin growth on the surface of the casing soil. The colonies may grow to several feet in diameter. More sclerotia are produced and secondary infestations may occur.

Most Frequent Source(s) of Infection—Air, compost, soil.

How Spread—Airborne, primary infestation expands.

Predisposing Factors to Infection—Wet unfinished manure.

Suggested Control Measures—Thorough aerobic composting and pasteurization, proper compost moisture, soil sterilization.

Common Name of Disease—Olive green mould.

Scientific Name of Causal Organism—*Chaetomium olivaceum*.

Brief Description of Causal Organism—The mycelium is greyish at first, then white in mass but not so cottony or luxuriant as the mould called "white chaetomium." Occasionally dense masses of mycelium may take on a bright yellow appearance. After about 10—14 days very characteristic olive green burrs are produced on surfaces of straws and compost inhabited by the mould. Once this fruiting begins the overall aspect of the mould changes from white to dark green. Within the perithecia are produced many dark, 1-celled, globoid to elliptic spores.



Symptoms Produced—As the mould begins growth in the compost it is detected as greyish-white mycelium along with the spawn growth or deeper in the bed than spawn may have grown. After about two weeks, numerous individual perithecia form and may become so abundant as to appear a mass of olive green burrs. The degree of infestation of this weed mould varies inversely with the suitability of the compost for spawn, i.e., compost which has not been properly finished after anaerobic over-heating will support a rich growth of the mould but in compost better suited to the spawn the two fungi are compatible and the spawn can compete successfully. Compost in which the spawn can not compete with the mould will produce few if any mushrooms or at best the crop will be greatly delayed.

Brief Life History of Causal Organism—Spores of this mould extremely heat resistant and are very abundant in nature and may be present in the air, the compost and the soil. Spores germinate and the mycelium of the mould grows rapidly through compost damaged by over-heating in pasteurization under low levels of oxygen. After about two weeks the fruting bodies (perithecia) of the mould are formed and as they mature spores of the mould are produced internally. When the perithecia rupture the spores can be disseminated. The spores are very resistant and may survive inadequate pasteurization and soil treatment.

Most Frequent Source(s) of Infection—Air, compost, soil, spent compost.

How Spread—Air, ground water.

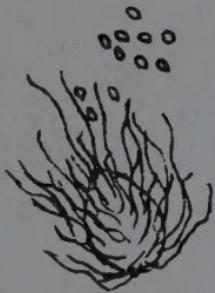
Predisposing Factors to Infection—Compost which has been pasteurized to a temperature exceeding 142° F. in the absence of fresh air and which has not had a sufficient reconditioning period of lower temperatures and aeration in pasteurization following the overheating.

Suggested Control Measures—Aerobic pasteurization not to exceed 142° F. or if the temperature does go beyond this, then pasteurization should be extended in the range of 130° F. for another 24-48 hours. Low levels of oxygen during the peak-heat period are more detrimental than high temperatures per se.

Common Name of Disease—White Chaetomium.

Scientific Name of Causal Organism—*Chaetomium* sp.

Brief Description of Causal Organism—The mycelium is greyish and rather sparse at first but usually develops a white cottony mycelium much more luxuriant than the Chaetomium known as "olive green mould". After about 3-4 weeks dark green, ovoid fruiting bodies covered with long spiral hairs develop beneath the overlying white mycelium. These fruiting bodies are called perithecia inside of which globoid, dark, 1-celled spores are produced. These perithecia are not formed so soon nor numerously, nor are they as burr-like as those of *Chaetomium olivaceum*.



Symptoms Produced—This mould is usually first seen developing on the surface of the compost before casing. Later it may be seen covering straws and bits of compost that project up through the casing layer. It may be favoured by a sub-optimum compost but does not seem to interfere with production so long as the mushroom mycelium can become well established.

Brief Life History of Causal Organism—Spores of this weed fungus germinate on the surface of the compost primarily, where a mycelium is formed which is first greyish then luxuriantly snow white. The mould may remain vegetative for nearly a month before its perithecia are formed beneath the mycelium. As the perithecia mature they rupture and the fully developed spores are released.

Most Frequent Source(s) of Infection—Air, compost, soil.

How Spread—Airborne.

Predisposing Factors to Infection—None known.

Suggested Control Measures—Proper aerobic pasteurization; soil sterilization.

BULK OIL SCHEME UNDER WAY

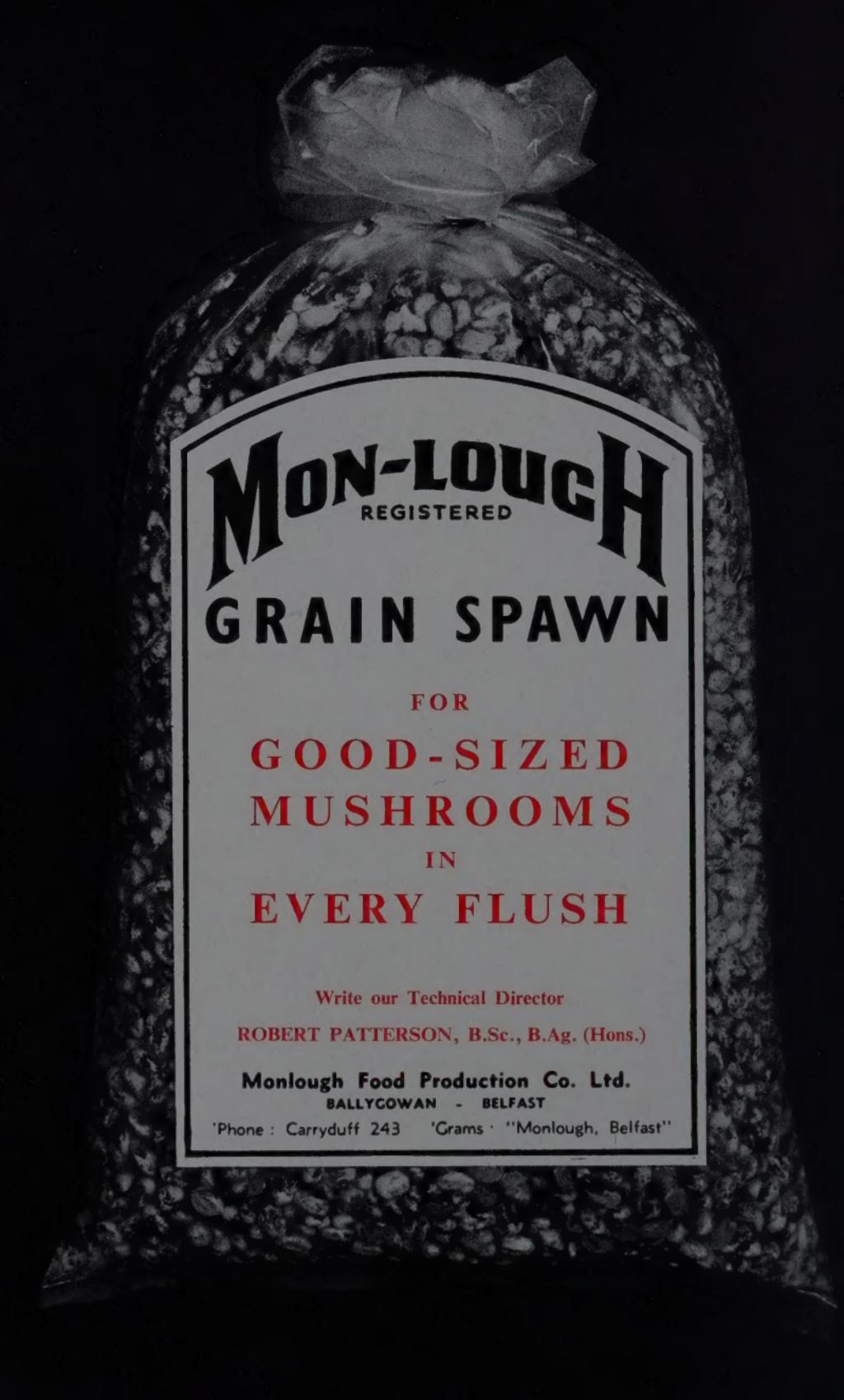
On July 1st, with some preliminary wobbles, the MGA Scheme for the bulk purchase of fuel oil got under way and is now proceeding through reasonably calm waters.

If you are using fuel oil on any sizeable scale then you are urged, in your own interest, to contact the MGA Secretary, who will give you full details of how this MGA Scheme is working.

Some idea of the saving possible is made quite clear by the fact that if all the sixty MGA members who, at the time of writing this (July 3rd), agreed to join the scheme they would be saved a total of nearly £9,000 (nine thousand, not nine hundred) in the coming year and, in addition, the MGA itself would financially benefit.

Any member of the MGA may join in this scheme and the fact that he or she may well use fuel oil in other directions, like tomato growing, flower production or similar horticultural or other pursuits, does not preclude that member from obtaining all his oil through this scheme of ours.

This scheme is worthy of support by the entire industry so send in your enquiries without delay.



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CHURCH FARM—WITTERING

Raymond Thompson, present MGA Chairman, has been growing mushrooms at Church Farm, Wittering, Chichester, Sussex, since 1948.

Mr. Thompson, who is 46, served in the R.A.F. during the war as an Intelligence Officer. He is widely travelled, has been an Underwriter at Lloyds for many years and is a popular figure throughout the mushroom industry.

At Church Farm he has about 40,000 sq. ft. of bed space, all under the tray system. The farm buildings are laid out to tray growing and geared to just over five crops per year. In 1958 the average per crop was about 2 lb. per sq. ft. including stalks, giving a yearly production of about 10 lb. per sq. ft., a high figure even in these days of increased production. This was a tremendous increase on his previous production figures.

Buildings.

The farm consists of 10 cropping houses, four of which are 18' × 73' Handcrafts with the others constructed of curved asbestos sheets insulated externally. In addition there is a peak heat room, two spawn running rooms, packing shed, etc.

The peak heat room, measuring 45' × 20' has an almost flat ceiling and is heavily insulated. Air is drawn in by a 3 h.p. fan into a 6" metal duct at ceiling level. The duct has spouts every two feet and the area of all the spouts equals the area of the duct itself. There is a wooden duct also, at floor level and, through this, air can be drawn for re-circulation. Low pressure steam pipes and live steam provide the heat. Bitumastic on walls and ceiling is not quite sufficient to prevent steam leaking into the structure and experiments with polythene are in progress.

One of the spawn running houses is a Handcraft, 40' × 18', insulated inside with fibreglass and lined with asbestos. The other is the same size but built of breeze blocks and asbestos roof again lined with fibreglass.

All the growing houses have an air movement duct of 24" lay-flat 500 gauge polythene, suspended two to three feet below the ceilings with a 15" fan at one end to draw in air and also to re-circulate.

Boiler.

The McNeill low pressure boiler has a rating of 850,000 B.T.U's., and can be operated at pressures varying from four to 20 lb. with a maximum of 25 lb. It is oil fired and automatically controlled and, says Mr. Thompson, "it is extremely efficient provided it is kept clean".

Ducting and Fans.

Something has already been said about the metal ducting in the peak heat house and it is interesting to note that although it was predicted that this ducting would not last more than six months it has,

in fact, now been in use for about five years and is still going strong. It is heavily coated, inside and out, with bitumastic paint.

Mr. Thompson emphasises that the farm grew from small beginnings but, with a new and properly planned farm, he would carry out many improvements both with regard to general lay-out and the various installations.

All the growing houses and the spawn running rooms are fitted with in-let ducts but those in the spawn running rooms are rarely if ever used. "I might well do better if I increased the air movement but it is very difficult to decide", says Mr. Thompson.

Composting.

Horse manure on this farm is medium to heavy military type and, on arrival, every forkfull as unloaded, is inspected by the farm foreman who also carries out what watering is necessary at this stacking. In this way the foreman is able to keep a close eye on all manure and, if necessary, to reject that which does not come up to standard. The farm works in units of 4,000 sq. ft. and about 32 tons of manure are required for each unit. This works out at about 1 ton of manure to 125 sq. ft., in Norwegian type fish boxes. About four tons of battery chicken manure is added to the complete stack and the first turn takes place on the Monday following the completed delivery. At the second turn, which takes place the following Thursday, 8 cwt. of Gypsum is added and a similar amount is added five days later when the third turn takes place. Filling is carried out two days after the final turn. Thus the time from the first stacking to filling is 12 days in all.

It is usual at Church Farm to consolidate the pile at stacking but thereafter it is stacked loose. Watering usually takes place also at the first and second turns and the stack remains 4' 6" high and 5' 6" wide until the final turn when the width is reduced by 6".

Turning is carried out by a tractor with foreloader and a modified farm manure turner driven by another tractor. Two metal sheets behind the turner face the sides of the heap. The manure spreader, an Onnelly, has had its paddle beater removed and a watering device incorporated.

Three men, including the tractor driver, manage the turning, the heap of 32 tons taking between four and five hours for a complete turn.

Particular care is taken to see that nothing like a sack, a box or anything similar, is left on top of the heap whilst composting is in progress. Temperatures in the heap rise to about 165°F or sometimes up to 170°F.

Filling and Peak Heating.

When the time for filling the trays arrives the roller track is set

up, from heap to peak heat house and the turning machine, complete with special filling hood, is backed at right angles to the rollers. The turner is filled in the usual way, with the tractor and foreloader—and, in all, seven men are employed to complete the operation, filling 4,400 sq. ft. in about six and a half hours. About $2\frac{1}{2}$ inches is allowed between boxes and, with both steam and steam pipes on, 146°F is reached in five hours. Once this temperature is reached steam and steam pipe heat are switched off and ventilators opened up.

The bed temperature will continue to rise but Mr. Thompson holds to the opinion that bed temperatures of even up to 150 degrees or more are not dangerous, **provided there is sufficient air**. After about 12 hours the temperature begins to drop slowly for about 112 hours, preparatory to spawning.

Spawning.

With the drop in temperature to 90°F in cold weather and 80°F in warm weather spawning, now one of the most interesting operations this farm, takes place.

After carrying out many experiments with top spawning, skuffling in and spawning in depth, Mr. Thompson has finally decided on the latter. He says "I feel the advantages of through spawning, particularly if the spawning rate is doubled, are very considerable". The spawning gang consists of two men unstacking the boxes and pushing them along the roller conveyor, a third man who tips the boxes on the receiving platform of the spawning machine and actually spawns, a fourth man who passes the empty boxes round the back of the machine ready for re-use, a fifth man engaged in filling the boxes, with the sixth levelling off and tamping in, a boy pushing the boxes to the spawn running house and two more men doing the stacking.

The particular interest concerns the use of an old D.L.P. machine for thoroughly mixing the compost and spawn. This machine, with quite simple adaptations, makes an excellent job of it.

Spawn Running—Casing.

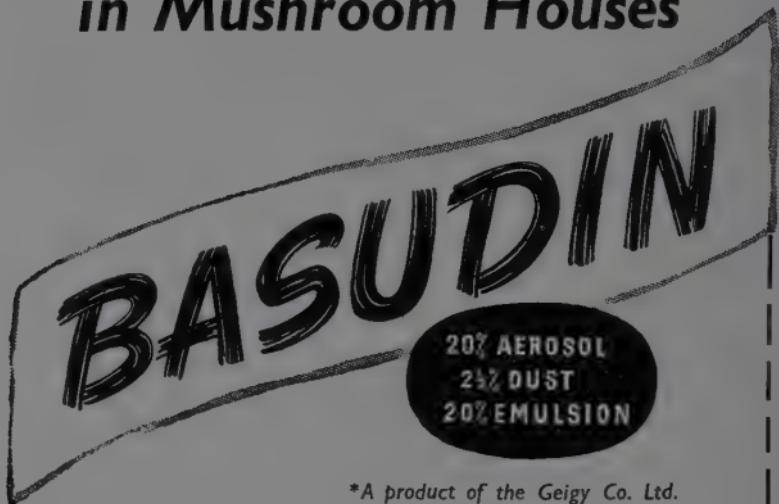
The winter problem of maintaining both heat and humidity during the spawn run and the summer problem of keeping temperatures down are well known and are not neglected at Church Farm. Air temperatures of around 70°F-72°F are maintained but this may rise to 75°F in winter but over this is considered undesirable, although in summer, it cannot always be prevented. Controlled live steam is used to maintain humidity during the run. A Tack filter fan is used in summer to keep the temperatures down and doors are only opened in grave emergency.

Casing.

Spawn running takes the customary 13 days and a mixture of peat and chalk is used for casing. No lime at all is now added although it was up to the end of 1957. A mixture of $3\frac{1}{2}$ tons of kibbled chalk to 32 cwt. of peat (Irish) has given the best results so far on this farm and

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the high proportion of chalk is held to reduce the incidence of *Mycogone*.

In order to get plenty of water into the casing material, a point held to be of very considerable importance, the bales of peat are soaked in a tank and those engaged in preparing the peat all wear white rubber boots. Thus, any workman straying from the peat preparation to another part of the farm is easily spotted and quickly checked. The bales of peat soak for a minimum of 24 hours but much longer is preferred with the soaking tank continually topped up. The mixing is carried out by hand, three men being engaged on this job. A suitable mixing machine has, in Mr. Thompson's opinion, not yet been devised in this country. For reasons of hygiene, chalk and peat are all covered with plastic sheets. Six men are normally engaged on casing unless two teams of two are required, as they occasionally are, for stacking in the growing rooms. Casing is carried out by hand. A stacking machine is the next priority.

How important is casing ? Well, Mr. Thompson thinks that very many pounds of mushrooms are lost through insufficient attention to casing.

Watering.

The farm is equipped with a central water tank from which it is possible to service the entire farm with plain water and also water containing an additive like Red Label Deosan (Sodium Hypochlorite), which is widely used at Church Farm, but throughout 1958 the policy was to use 1 lb. of Parzate to every 100 gallons of water, to combat *Mycogone*. The Deosan is used to combat bacterial pit and blotch and, with the trouble cleared up the use of Deosan is discontinued. The use of Sodium Chloride (common salt) has been discontinued also in favour of Sodium Sulphate and there is some evidence that this has led to cleaner and larger mushrooms or at least is a contributory cause. Mr. Thompson is a great believer in adequate watering and the first watering, always remembering that the casing material has been thoroughly wetted in the first instance, is determined the moment the spawn run is seen through the top of the casing.

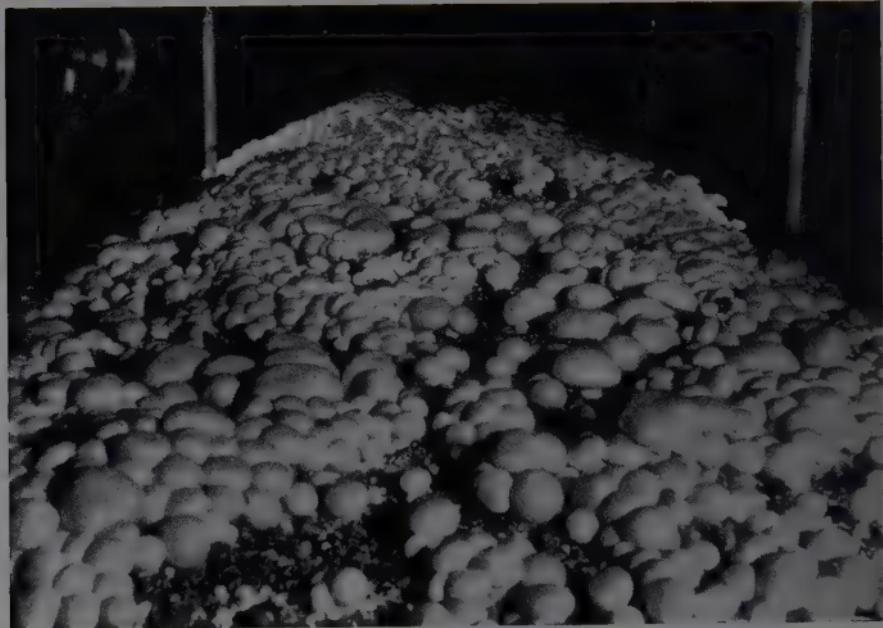
Three or four heavy waterings are given before the first pick and thereafter watering takes place as and when needed. Less water is given towards the end of a crop when the temperature is raised to complete the crop quickly.

Ventilation during Cropping.

The houses are kept completely closed for five days after being filled with trays but air movement within the house is maintained. In order to improve quality and, possibly, to extend the crop life, growing temperatures are now maintained at about 57°F except during the last ten days of crop life when it is pushed up to 65°-70°F. In this final period ventilation is again cut down. Mr. Thompson reckons to pick half his total crop weight in the first two flushes.

Continued on Page 264.

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Emptying.

The greatest possible hygiene is now carried out at Church Farm where the houses are emptied with all possible speed. During dry weather the shed area and all areas connected with emptying are kept wet with S.D.N.O.C. and every few months the whole farm site is sprayed with S.D.N.O.C.

Picking.

This is carried out by the permanent staff and mushrooms are graded, with five grades in all, including stalks which are marketed. Mr. Thompson grades a picker who totals 25 lb. or over an hour (picked, graded and weighed) as good, 20 lb. or over fair, and under 12 lb. unemployable. Women pickers are a problem however, especially in the summer months with attractive jobs obtainable in holiday camps. His wage bill is high.

Marketing.

The usual channels are used for marketing with the bulk of the mushrooms going to Covent Garden. Local sales, especially in the summer months, play quite an important part in the crop disposal and a self service store operates without trouble or serious financial loss. On one occasion, to test the contention that mushrooms in veneer chips made more money than those in cardboard containers, Mr. Thompson carried out an experiment with both types and dispatching one type from one station and the other from another. Result ? Not the slightest difference in returns.

The usual pest control methods are employed on the farm with the exception that they are maintained at a high level throughout and are intensified at the slightest sign of danger. A tractor towed mobile tank, fitted with an electric pump can, in the matter of spraying hygiene, cover an enormous area in a very short time, using a six to eight feet wide spray. The complete farm spraying with S.D.N.O.C. has been stepped up from once every three months to once a month. Again in support of general farm hygiene all cropping houses when empty, are heated out and, with Maywick sterilizers as a booster, temperatures of well over 200°F (on one occasion a thermometer broke at 240°F) are held for two hours or more.

Mr. Thompson holds the view that a farm which is cropping well is more prone to attack of disease. He experienced rather more than his share of "La France" or "Brown Disease" in 1957 when crops were reduced to under the 1 lb. mark.

Cross stacking of trays is favoured for, as Mr. Thompson says, "It eases picking, increases air movement, improves cropping and is easier for stacking and emptying."

The permanent staff at Church Farm numbers about twenty-five including the women pickers, packers, and maintenance staff.

WOT A GEYSER!

We discuss a Scheme which saves much 'dough'
In this month's topical Calypso.
Some M.G.A. members sitting happy and neat,
Closing their eyes to the cost of heat,
Are quite unaware that our bright Sec.,
Seldom if ever taking time to sit back,
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WORLD'S PRESS DIGEST

More mushrooms than could be coped with had been sent. *Nurseryman Seedsman*, June 4/59. Supplies have been slightly heavier this week. *Fruit Trades Journal*, June 6/59. Mushrooms were still overdone. *Nurseryman Seedsman*, June 11/59. The market generally is slow for a heavier weight of mushrooms. *Fruit Trades' Journal*, June 13/59. Dispirited salesmen said of the unchanged state of mushrooms, " Too many ". *Nurseryman Seedsman*, June 18/59. A miserable trade in this hot weather ; salesmen try hard early in the day to make a fair price, but too often even well-selected cups and buttons move out at very slow money, and prices cannot be regarded as satisfactory. *Fruit Trades' Journal*, June 20/59. Fewer mushrooms had come in, but customers were still sparse. *Nurseryman Seedsman*, June 25/59. Mushrooms are hard to sell. *Grower*, June 27/59.

The market generally has shown an all round fall, the prices of nearly all commodities have been affected. The most significant factor in this is the arrival of tremendous quantities of strawberries. It seems a case of everything stopping for this fruit, and nearly everywhere there are fervent prayers for a quick end to the season.

Fruit Trades' Journal, June 20/59.

" There is a need to extend the strawberry season over a longer period ", said Mr. C. Howard Jones, noted authority on strawberries, at Bordon, Hants. He noted that this year, with such an early season, processors had not been prepared for the crop and it was the growers who suffered.

Commercial Grower, July 3/59.

At the recent Ideal Homes Exhibition, 44,333 grocery items were bought. Of this total, no less than 34,304 were delicatessen lines, including 582 tins of mushrooms in sherry or brine.

Delicatessen, May/59.

" Golden " processed soft cheese spreads are now being imported from Denmark in eight varieties in hermetically sealed gold foil cups, including Mushroom Spread. . . . From Italy comes Sugoro's ready-made mushroom sauce for spaghetti, macaroni, etc. . . . Canned game is now arriving from Poland, the first arrival being the whole partridges roasted in butter with mushrooms.

Delicatessen, May/59.

Coffee growers in Brazil have greeted a plan, to cut their production by grubbing a billion trees, with complacency. They consider it as essential for their future well-being. This government measure has been put into effect because over-production has caused a fall in world coffee prices. Well, that's one way of tackling the problem. It could happen here. But it would hardly be received with complacency.

Grower, June 20/59.

Top quality cultivated mushrooms are being produced by growers in every part of the world. In Britain they mainly come from Surrey and Sussex, but there are now several growers at work in Scotland. In Edinburgh all next week you will be able to watch a representative of the Scottish Gas Board cooking a variety of mushroom recipes recommended by the Mushroom Growers' Association, who are presenting

the programme.

Edinburgh Evening Dispatch, May 23/59.

About two years ago the enterprising landlord in the local hostelry began putting on such dishes as mixed grill and steak and chips. One evening a very well known personality in Covent Garden asked to have mushrooms included with the Dover Sole, but this met with a very definite negative response. A week later, receiving the same negative reply, he produced a chip which was duly cooked and served. From that evening onwards, mushrooms have been a regular feature on the menu and, working it out the other evening over a glass, the landlord reckoned he had sold over £850 worth of mushrooms over the past twelve months.

Bill Sandford in *Fruit Trades' Journal*, June 6/59.

I grow mushrooms, and received this tip from an expert. Sow the spawn in a mixture of manure and damp peat and keep the box in a dark humid place. I have excellent results this way.

Peter Milner in *Boys' Own Paper*, July/59.

The intensification of production and the overall expansion of the mushroom industry have now created a demand for the preparation of synthetic spawn which is manufactured both in Britain and abroad, and is produced to two formulae. The spawn arrives in hermetically sealed containers and is stored at even, thermostatically controlled temperatures in strong rooms. . . . It is estimated that the Cuthbertson compost turner does the work of 15 men and that, were the present level of production in Britain to be entirely labour-manned, a force of more than 20,000 would be required instead of the present 2,000. This surprising figure is reached by the fact that more than compost making is now "automated". In some instances almost the whole of the production is mechanical except for the picking.

Celine Lloyd in *The Times Review of Industry*, June/59.

A newcomer, the Microsol Generator, "fulfills the need for a medium-priced atomising machine", claim the makers, Pan Britannica Industries Ltd., "At £43 it is cheaper than most aerociding equipment".

Nurseryman Seedsman, June 18/59.

The Shandon Scientific Company have produced a kit for testing the efficiency of a boiler. It measures the amount of carbon dioxide in the flue gases to the nearest half per cent and costs £49 7s. 6d.

Grower, June 14/59.

Hose clips often have to be applied in positions awkward to get at and have to be screwed securely to withstand high pressures. To make this operation easier a special chipdriver has been introduced for use with Jubilee Wormdrive Hose Clips by L. Robinson & Co. (Gillingham) Ltd., Gillingham, Kent, at 4/9 and 4/6.

Industrial Equipment News, Mid-June/59.

Floor surfacing material, I.F.T. Surfacer, a bitumen emulsion, can be used to overlay any type of floor in thicknesses as small as $1\frac{1}{2}$ and, when set, it gives a tough, hard-wearing and continuous floor which does not create dust. Where patch repairs are to be carried out hacking and keying are unnecessary. It is made by Industrial Floors

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Industrial Equipment News, Mid-June/59.

Model 1500 Aerosol-Turbo air conditioning unit supplies re-circulated or fresh air into the environment at 1,500 c.f.m., and into this airstream is introduced a flow of minute aerosols by which the machine achieves accurate control of the atmospheric conditions. All air passing through is washed and cleaned. The unit maintains an overall even humidity for a volume of up to 50,000 cu.ft., and is non-wetting, say P. M. Walker & Co. (Halifax) Ltd.

Industrial Equipment News, June/59.

Easier application of Slagbestos mineral wool is made possible by its manufacture in flexible mat form. It has a K value of 0.24. Price is 1/7½ per sq. yd. at 1" thickness and a density of 3 lb./cu. ft., say F. McNeil & Co. Ltd., 10 Lower Grosvenor Place, London, S.W.1.

Industrial Equipment News, June/59.

A new bi-metal silage thermometer called the "Benedict", made by Benedict (Agricultural) Ltd., 4 Queensdale Place, London, W.11., has a well-pointed chromium plated stem which is 40" long by five-eighths inch diameter. The large 3¾" diameter dial gives easy reading even in failing light. Its price is £5 18s.

Farm Implement and Machinery Review, June/59.

The Minister of Agriculture has given his official blessing to the movement to foster the formation of machinery syndicates to serve the needs of small groups of neighbouring farmers.

Sunday Times, June 28/59.

A night temperature variation of plus or minus 1 deg. F. can affect early yields of tomato by 13 to 20 per cent., growers were told at the Efford Experimental Horticulture Station's open day.

Commercial Grower, June 5/59.

On the question of heat distribution, Mr. G. Shipway, of Wrest Park, said that it had been found that high speed hot water in small diameter pipes gave the most uniform and satisfactory performance, and was cheaper in cost and installation.

Commercial Grower, June 5/59.

There is *verticillium* wilt in the mushroom crops. This disease can be spread by mice. Cheshire correspondent in *Grower*, June 6/59.

Studies at Littlehampton of the life cycle of the Cecids show that although they increase rapidly in compost, no damage results to the crop until the larvae migrate to the developing mushroom and cause damage by poliation. A promising method to prevent migration is by mixing gamma BHC to the casing material.

Commercial Grower, June 5/59.

Studies of Brown Disease are continuing at Littlehampton and, although the causal agent has not been discovered, it has been possible to transmit the disease by inoculation. Possible causes may be the presence of an infective agent or changes in nutritional requirements. It was thought that transmission through infected spawn was unlikely.

Commercial Grower, June 5/59.

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THOSE STALKS IN THAT EDITORIAL

The June Editorial may have been intentionally provocative : if so it was certainly successful. It makes two proposals : 1. leave longer stalks on the mushrooms, and 2. stop selling stalks separately.

1. Many Growers do leave an inch and a half of stalk or more on their mushrooms. In our experience, comparing notes with other growers and salesmen, the result is that they get a lower price per lb. for their mushrooms. Whether the greater weight with the extra stalk compensates for the lower price, only very careful trial on a considerable scale could tell with any certainty, and even then the answer would probably be different in different markets. It is no use suggesting that *all* mushrooms should be marketed with long stalks because some do not grow with long stalks ; while customers are willing to pay more for mushrooms with short stalks, as apparently they are at present, mushrooms which grow that way will fetch better prices, and it is absurd to try and ban attempts to get those top prices by trimming stalks short. It is a matter for each grower to decide whether he would rather have greater weight and lower price with long stalks or smaller weight and higher price with short ones. It is well known that flat mushrooms have more flavour than tightly closed buttons—I have heard Mr. Atkins speak with praise of flats a week old, and that flavour is attributed to the ripeness of the spore-bearing gills. The stalks taste more like buttons, and do not develop gills ; they may have “a distinct mushroom taste”, but not as much as the cap.

2. **No sale of Stalks.** Presumably Mr. Alderton does not accept the almost unanimous opinion of the market salesmen in their replies to the mushroom processing questionnaire, that the removal of stalks from the market would not affect the market price of mushrooms. Does he suspect that their answers were not sincere, or that they were mistaken, and he knows better than they do ? If stalks are not to be sold because “It is extremely doubtful if marketing stalks is profitable anyway”, that most certainly applies also to large quantities of poor quality mushrooms which are sent to market, and sometimes fetch no better prices than the stalks do. These mushrooms cost as much to grow as good ones, and are often sold for less than their cost of production. The stalks are a by-product of grading and packing to high standards, raising the selling price of the final products (the mushroom), and as a by-product can legitimately and profitably be sold at by-product price.

3. Can Mr. Alderton produce convincing evidence to show that longer stalks probably give mushrooms a longer shelf life ?

R. L. Edwards

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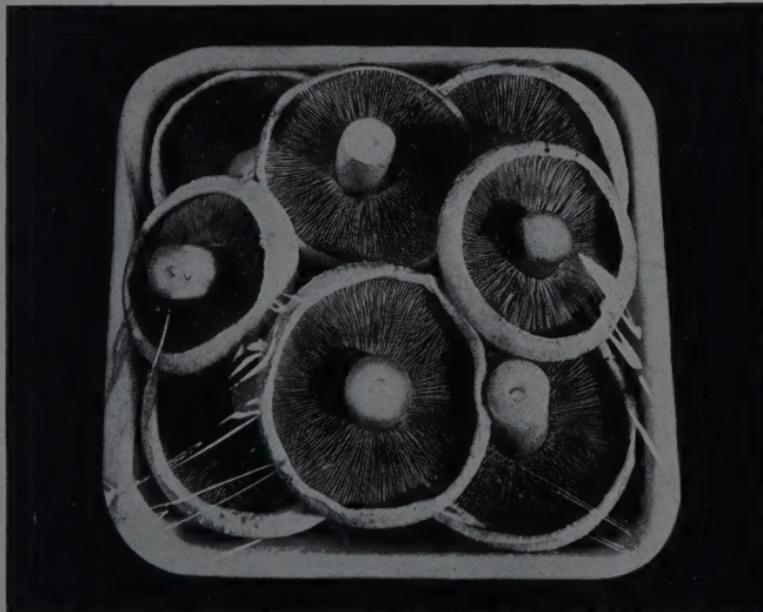
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